

UNDERWATER BRIDGE INSPECTION REPORT

STRUCTURE NO. 73551

CSAH NO. 2

OVER THE

SAUK RIVER

DISTRICT 3 - STEARNS COUNTY



PREPARED FOR THE
MINNESOTA DEPARTMENT OF TRANSPORTATION

BY
COLLINS ENGINEERS, INC.

JOB NO. 5221

MINNESOTA DEPARTMENT OF TRANSPORTATION
UNDERWATER BRIDGE INSPECTION

REPORT SUMMARY:

The substructure units inspected below water at Bridge No. 73551, Piers 1, 2, 3, and 4, were found to be in good condition with no defects of structural significance at this time. The piles exhibited coating failure and minor corrosion from 1 foot above the waterline to the channel bottom with light a layer of aquatic growth below the waterline. The channel bottom around the substructure units appeared stable with no significant scour.

INSPECTION FINDINGS:

- (A) All of the piles for Piers 1 through 4 exhibited coating loss from 1 foot above the waterline to the channel bottom with light aquatic growth below the waterline. Minor surface corrosion with small rust nodules 1/8 inch in diameter was observed below water on less than 10 percent of the surface area with no related section loss. There was minimal overall deterioration present on the piles in the regions of the coating loss.

RECOMMENDATIONS:

- (A) Reinspect the submerged substructure units at the normal maximum recommended (NBIS) interval of five (5) years.

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

Daniel G. Stromberg

Date 6/30/2008 Registration No. 21491

Respectfully submitted,

COLLINS ENGINEERS, INC.

Daniel G. Stromberg
Registered Professional
Engineer, State of Minnesota

MINNESOTA DEPARTMENT OF TRANSPORTATION
UNDERWATER BRIDGE INSPECTION

1. BRIDGE DATA

Bridge Number: 73551

Feature Crossed: Sauk River

Feature Carried: CSAH No. 2

Location: District 3 – Stearns County

Bridge Description: The superstructure consists of a five span reinforced concrete slab. The superstructure is supported by two reinforced concrete abutments and four steel pipe pile piers. The piers are numbered 1 through 4 starting from the north end of the bridge.

2. INSPECTION DATA

Professional Engineer/Team Leader: Daniel G. Stromberg, P.E., S.E.

Dive Team: Clayton G. Brookins, Valerie Roustan

Date: October 19, 2007

Weather Conditions: Partly Cloudy, 50°F

Underwater Visibility: 0.5 feet

Waterway Velocity: Negligible / None

3. SUBSTRUCTURE INSPECTION DATA

Substructure Inspected: Piers 1 through 4.

General Shape: Piers 1 through 4 consist of a single line of nine steel pipe piles supporting a reinforced concrete cap. Each abutment is an open abutment with a grouted riprap slopewall.

Maximum Water Depth at Substructure Inspected: Approximately 11.3 feet.

4. WATERLINE DATUM

Water Level Reference: The top of the parapet wall at the east end of Pier 3.

Water Surface: The waterline was approximately 13.3 feet below reference.
Assumed Waterline Elevation = 86.7.

5. NBIS CODING INFORMATION (Minnesota specific codes are used for 92B and 113)

Item 60: Substructure: Code 7

Item 61: Channel and Channel Protection: Code 8

Item 92B: Underwater Inspection: Code B/10/07

Item 113: Scour Critical Bridges: Code L/02

Bridge is scour critical because abutment or pier foundation is rated as unstable due to observed scour at bridge site.

 Yes X No



Photograph 1. View of Pier 1, Looking Northeast.



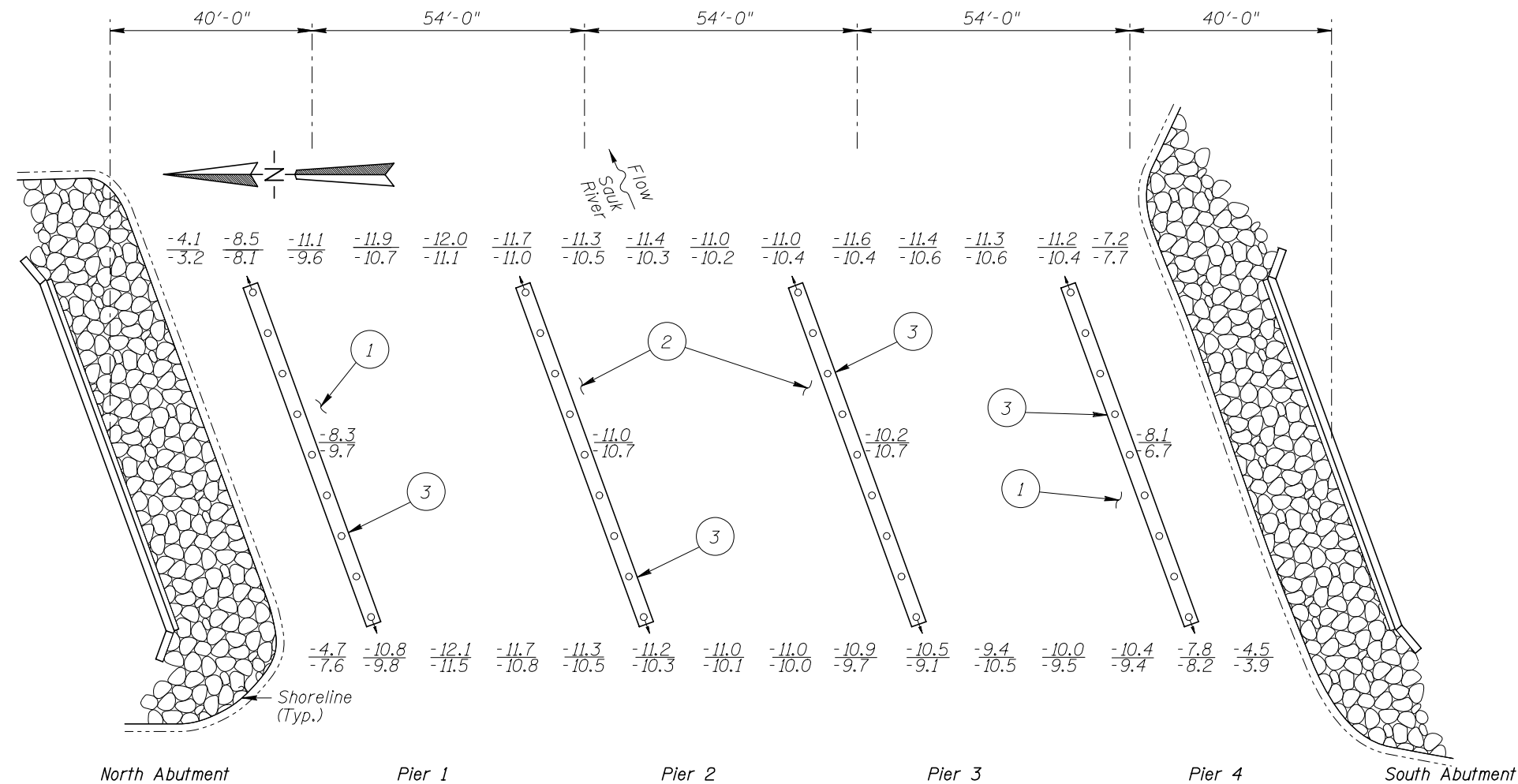
Photograph 2. View of the Pier 2, Looking Northeast.



Photograph 3. View of Pier 3, Looking Northeast.



Photograph 4. View of Pier 4, Looking Northeast.



GENERAL NOTES:

- Piers 1 through 4 were inspected underwater.
- At the time of inspection on October 19, 2007, the waterline was located approximately 13.3 feet below the top of the parapet at the downstream end of Pier 3. Since insufficient bridge elevation information was available a reference elevation of 100.0 was assumed. Based on the assumed reference the waterline elevation was 86.7.
- Soundings indicate the water depth at the time of inspection and are measured in feet.
- Soundings were taken parallel to the bridge at 1/4 point intervals between the substructure units.

INSPECTION NOTES:

- The channel bottom material around Piers 1 and 4 consisted of up to 1 foot diameter riprap and sand.
- The channel bottom material around Piers 2 and 3 consisted sand and some stones with up to 4 inches of probe rod penetration.
- All of the piles for Piers 1 through 4 exhibited coating loss from 1 foot above the waterline to the channel bottom with minimal overall steel deterioration and with light aquatic growth on the surfaces below the waterline. Minor surface corrosion with small rust nodules, 1/8 inch in diameter, were observed below water on less than 10 percent of surface area with no related section loss.

TYPICAL END VIEW OF PIERS

Legend

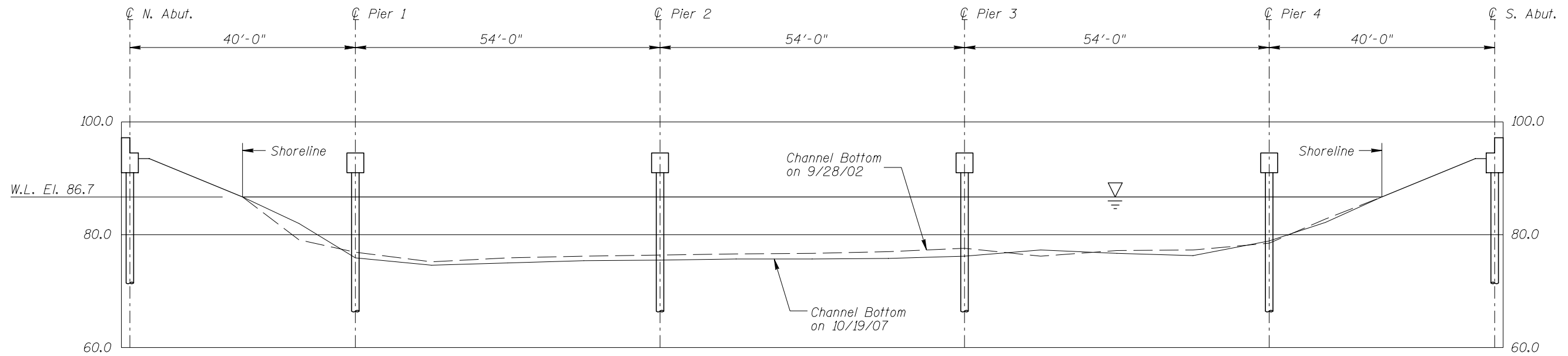
- 5.5 Sounding Depth from Waterline (10/19/07)
- 5.2 Sounding Depth from Waterline (9/28/02)
- 16" Diameter Steel Encased, Cast-in-place Concrete Pile
- ⬮ Battered 16" Diameter Steel Encased, Cast-in-place Concrete Pile
- Grouted Riprap

MINNESOTA DEPARTMENT OF TRANSPORTATION UNDERWATER BRIDGE INSPECTION

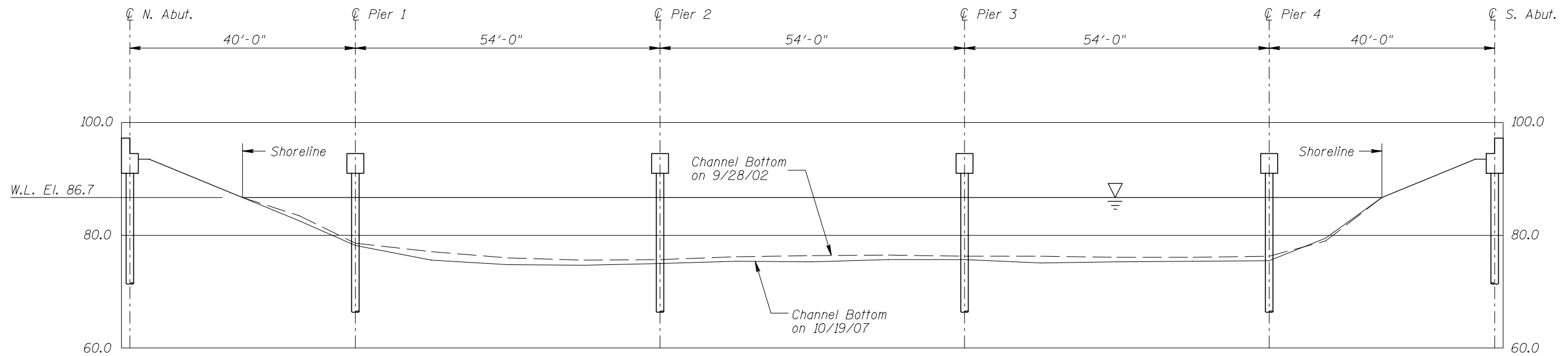
STRUCTURE NO. 73551
OVER THE SAUK RIVER
DISTRICT 3, STEARNS COUNTY

INSPECTION AND SOUNDING PLAN

Drawn By: LJ	COLLINS ENGINEERS <small>123 North Wacker Drive Suite 300 Chicago, IL 60606 (312) 704-9300 www.collinsengr.com</small>	Date: OCT, 2007
Checked By: VR		Scale: NTS
Code: 522173551		Figure No.: 1



UPSTREAM FASCIA PROFILE



DOWNSTREAM FASCIA PROFILE

Note:
Refer to Figure 1 for General Notes.

MINNESOTA DEPARTMENT OF TRANSPORTATION UNDERWATER BRIDGE INSPECTION		
STRUCTURE NO. 73551 OVER THE SAUK RIVER DISTRICT 3, STEARNS COUNTY UPSTREAM AND DOWNSTREAM FASCIA PROFILES		
Drawn By: LJ	COLLINS ENGINEERS <small>123 North Wacker Drive Suite 300 Chicago, IL 60606 (312) 704-9300 www.collinsengr.com</small>	Date: OCT, 2007
Checked By: VR		Scale: 1"=20'
Code: 522173551		Figure No.: 2

MINNESOTA DEPARTMENT OF TRANSPORTATION
OFFICE OF BRIDGES AND STRUCTURES
DAILY DIVING REPORT

INSPECTORS: Collins Engineers, Inc. DATE: October 19, 2007

ON-SITE TEAM LEADER: Daniel G. Stromberg, P.E., S.E.

BRIDGE NO: 73551 WEATHER: Partly Cloudy, 50° F

WATERWAY CROSSED: Sauk River

DIVING OPERATION: X SCUBA SURFACE SUPPLIED AIR
 OTHER

PERSONNEL: Clayton G. Brookins, Valerie Roustan

EQUIPMENT: Scuba, U/W Light, Scraper, Lead Line, Sounding Pole, Probe Rod, Camera

TIME IN WATER: 12:15 p.m.

TIME OUT OF WATER: 12:45 p.m.

WATERWAY DATA: VELOCITY Negligible / None

VISIBILITY 0.5 feet

DEPTH 11.3 feet maximum at Pier 2

ELEMENTS INSPECTED: Piers 1 through 4

REMARKS: Overall, the submerged steel of the piles was in good condition exhibiting coating failure from 1 foot above the waterline to the channel bottom with light aquatic growth below the waterline. Minor surface corrosion with small rust nodules 1/8 inch in diameter were observed below water on less than 10 percent of the surface area with no related section loss. There was minimal overall deterioration of the steel where the protective coating is failed or failing. No channel bottom deficiencies were encountered.

FURTHER ACTION NEEDED: YES X NO

Reinspect the submerged substructure units at the normal maximum recommended (NBIS) interval of five (5) years.

MINNESOTA DEPARTMENT OF TRANSPORTATION
OFFICE OF BRIDGES AND STRUCTURES

UNDERWATER INSPECTION CONDITION RATING FORM

BRIDGE NO. 73551
INSPECTORS Collins Engineers, Inc.
ON-SITE TEAM LEADER Daniel G. Stromberg, P.E., S.E.
WATERWAY CROSSED Sauk River

INSPECTION DATE October 19, 2007

NOTE: USE ALL APPLICABLE CONDITION DEFINITIONS AS DEFINED IN THE MINNESOTA RECORDING AND CODING GUIDE INCLUDING GENERAL, SUBSTRUCTURE, CHANNEL AND PROTECTION, AND CULVERTS AND WALL DEFINITIONS TO COMPLETE THIS FORM.

CONDITION RATING

			SUBSTRUCTURE						CHANNEL					GENERAL					
UNIT REFERENCE NO.	UNIT DESCRIPTION	MAXIMUM DEPTH OF WATER	PILING	COLUMNS, SHAFTS, OR FACES*	FOOTINGS	DISPLACEMENT	OTHER	OVERALL SUBSTRUCTURE CONDITION CODE*	SCOUR	EMBANKMENT EROSION	EMBANKMENT PROTECTION	OTHER (DRIFT/DEBRIS)	OVERALL CHANNEL & PROTECTION CONDITION	CONCRETE	STEEL	TIMBER	LOSS OF SECTION	PREVIOUS REPAIR OR MAINTENANCE	OTHER
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
	Pier 1	8.3'	7	N	N	9	N	7	8	8	8	N	8	N	7	N	7	N	N
	Pier 2	11.3'	7	N	N	9	N	7	8	N	N	N	8	N	7	N	7	N	N
	Pier 3	11.0'	7	N	N	9	N	7	8	N	N	N	8	N	7	N	7	N	N
	Pier 4	11.2'	7	N	N	9	N	7	8	8	8	N	8	N	7	N	7	N	N

*UNDERWATER PORTION ONLY

REMARKS: Overall, the submerged steel of the piles was in good condition exhibiting coating failure from 1 foot above the waterline to the channel bottom with light aquatic growth below the waterline. Minor surface corrosion with small rust nodules 1/8 inch in diameter were observed below water on less than 10 percent of the surface area with no related section loss. There was minimal overall deterioration of the steel where the protective coating is failed or failing. No channel bottom deficiencies were encountered.

NOTES: ATTACH SKETCHES AS NEEDED, IDENTIFY REMARK BY REFERRING TO UNIT REFERENCE NO. AND REMARK NO. USE GENERAL SECTION TO IDENTIFY OVERALL PRESENCE OF SPALLS, CRACKS, CORROSION, ETC.